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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,550	04/19/2004	William E. Smith	6978-000276	3437

27572 7590 01/25/2006

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 828  
BLOOMFIELD HILLS, MI 48303

EXAMINER

PANG, ROGER L

ART UNIT PAPER NUMBER

3681

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/827,550	<b>Applicant(s)</b> SMITH ET AL.	
	<b>Examiner</b> Roger L. Pang	<b>Art Unit</b> 3681	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 27-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8, 10, 11, 14, 15 and 17-26 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 9, 12, 13 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

The following action is in response to the election filed for application 10/827,550 on December 14, 2005.

#### *Election/Restrictions*

Claims 27-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 14, 2005.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6, 8, 10-11, 15, and 17-26 rejected under 35 U.S.C. 102(e) as being anticipated by Kirkwood '052. With regard to claim 1, Kirkwood teaches a torque biasing system, comprising: a clutch pack 90; a motor 110 that manipulates engagement of said clutch pack based on a control signal; and a control module that generates said control signal based on a torque command (torque command) and a calculated torque ((estimated) torque output), wherein said calculated torque is determined based on a model of said torque biasing system. With regard to claim 2, Kirkwood teaches the torque biasing system further comprising a clutch operator mechanism 82 that is driven by said motor and that imparts a linear force on said clutch

pack. With regard to claim 3, Kirkwood teaches the system, wherein said control signal is based on a difference between said torque command and said calculated torque (Fig. 17). With regard to claim 6, Kirkwood teaches the torque biasing system wherein said model of said torque biasing system includes a motor module, a clutch operator module and a clutch pack module (58; Fig. 17, all in 1). With regard to claim 8, Kirkwood teaches the system wherein said clutch operator of module generates a second position signal (DUTY CYCLE; "position" not being defined as an actual position of a component, as that is not claimed.) and a resistance torque  $eT$  based on a first position signal CURRENT VECTOR generated by said motor module, clutch operator data 432 and a resistance force (torque command - estimated torque output) generated by said clutch module. With regard to claim 10, Kirkwood teaches a method of controlling a torque biasing system, comprising: generating a torque command (torque command), determining a calculated torque ((estimated) torque output) based on a model of said torque biasing system; determining a control signal based on said torque command and said calculated torque; and controlling said torque biasing system based on said control signal (Fig. 17). With regard to claim 11, Kirkwood teaches the method wherein said control signal is based on a difference between said torque command and said calculated torque (Fig. 17). With regard to claim 15, Kirkwood teaches the method wherein said clutch operator of module generates a second position signal (DUTY CYCLE) and a resistance torque  $eT$  based on a first position signal CURRENT VECTOR generated by said motor module, clutch operator data 432 and a resistance force (torque command - estimated torque output) generated by a clutch module. With regard to claim 17, Kirkwood teaches a method of controlling a torque biasing system, comprising: determining a torque command (torque command), calculating a torque error based

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on said torque command and a model-based torque (Fig. 17), generating a control signal  $eT$  based on said torque error; and operating said torque biasing system based on said control signal. With regard to claim 18, Kirkwood teaches the method further comprising processing a previous control signal through a torque biasing system model to generate said model-based torque (Fig. 17). With regard to claim 19, Kirkwood teaches the method wherein said torque biasing system model includes a motor model, a clutch operator model and a clutch model (58; Fig. 17; all in 1). With regard to claim 20, Kirkwood teaches the method comprising processing said control signal through said motor model to generate a clutch operator interconnection value (Fig. 17). With regard to claim 21, Kirkwood teaches the method wherein said clutch operator interconnection value is generated based on a resistance torque (torque command - estimated torque output), a motor position signal 430 and motor data 432. With regard to claim 22, Kirkwood teaches the method further comprising calculating said resistance torque using said clutch operator model (Fig. 17). With regard to claim 23, Kirkwood teaches the method further comprising processing an interconnection position value through said clutch operator model to generate a clutch interconnection value (Fig. 17). With regard to claim 24, Kirkwood teaches the method wherein said clutch interconnection value is generated based on a resistance force (torque command - estimated torque output) and clutch operator data 430. With regard to claim 25, Kirkwood teaches the method further comprising calculating said resistance force using said clutch model (Fig. 17). With regard to claim 26, Kirkwood teaches the method further comprising processing a clutch interconnection value through said clutch model to generate said model-based torque (Fig. 17).

***Claim Rejections - 35 USC § 103***

Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirkwood as applied to claims 6 and 10 above (respectively), and further in view of Morishita '040. Kirkwood teaches the torque biasing system wherein said motor module generates a first position signal CURRENT VECTOR based on said control signal, a motor armature position 430, a motor current 432, motor data 434 and a resistance torque generated by said clutch operator module (torque command - estimated torque output). Kirkwood lacks the teaching of sensing a motor temperature. Morishita teaches a motor 13, wherein a motor temperature 18 is sensed. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kirkwood to employ a motor temperature sensor in order to prevent motor overheating and failure.

***Allowable Subject Matter***

Claims 4-5, 9, 12-13, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hrovat and Amisano have been cited to show similar torque biasing controls.

Berger, Sturmer, Fukumara, Eich, Schaer, Schubert, Baer, and Frotscher have been cited to show similar controls and modules.

### **FACSIMILE TRANSMISSION**

Submission of your response by facsimile transmission is encouraged. The central facsimile number is (571) 273-8300. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see MPEP 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check should not be submitting by facsimile transmission separately from the check.

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Responses submitted by facsimile transmission should include a Certificate of Transmission (MPEP 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (571) 273-8300) on \_\_\_\_\_ (Date)

Typed or printed name of person signing this certificate:

\_\_\_\_\_  
\_\_\_\_\_

(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MPEP 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roger L. Pang whose telephone number is 571-272-7096. The examiner can normally be reached on 5:30am to 4:00pm.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Roger L Pang  
Primary Examiner  
Art Unit 3681

January 19, 2006